



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification 7 :</b> <b>C12N 5/00, 5/06, 11/02, 11/08, A61F 2/02, C12M 3/00, 3/04</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/46349</b> <b>(43) International Publication Date:</b> 10 August 2000 (10.08.00)
<b>(21) International Application Number:</b> PCT/US00/02688 <b>(22) International Filing Date:</b> 4 February 2000 (04.02.00) <b>(30) Priority Data:</b> 60/118,789 4 February 1999 (04.02.99) US <b>(71) Applicant (for all designated States except US):</b> TECHNION RESEARCH & DEVELOPMENT FOUNDATION LTD. [IL/IL]; Technion City, 32000 Haifa (IL). <b>(71) Applicant (for TJ only):</b> FRIEDMAN, Mark, M. [US/IL]; 1 Alharizi Street, 43406 Raanana (IL). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> MERCHAV, Shoshana [IL/IL]; 16 Hahursha Street, 34525 Haifa (IL). MERETSKI, Shai [IL/IL]; 30 Alon Street, 36811 Nesher (IL). <b>(74) Common Representative:</b> FRIEDMAN, Mark, M.; c/o Castornia, Anthony, Suite 207, 2001 Jefferson Davis Highway, Arlington, VA 22202 (US).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> METHOD AND APPARATUS FOR MAINTENANCE AND EXPANSION OF HEMOPOIETIC STEM CELLS AND/OR PROGENITOR CELLS  <b>(57) Abstract</b>  <p>A method of expanding/maintaining undifferentiated hemopoietic stem cells or progenitor cells by obtaining undifferentiated hemopoietic stem cells or progenitor cells; and either seeding the undifferentiated hemopoietic stem cells or progenitor cells into a stationary phase plug-flow bioreactor in which a three-dimensional stromal cell culture has been pre-established on a substrate in the form of a sheet, the substrate including a non-woven fibrous matrix forming a physiologically acceptable three-dimensional network of fibers, thereby expanding/maintaining undifferentiated hemopoietic stem cells or progenitor cells, or culturing the undifferentiated hemopoietic stem cells or progenitor cells in conditioned medium obtained from such a reactor.</p>		